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ABSTRACT

This paper suggests that students and their learning should become the focus of everything that college faculty do, examining what is currently known about student learning and where this knowledge comes from. Two large volumes have been published on what is known about student learning in college. A distillation of what is known can be extracted from research on: seven principles for good practice in undergraduate education; three critical conditions for excellence; and nine strategies for improving student learning. The seven principles of good practice emphasize: student-faculty contact; student cooperation; active learning; prompt feedback; time on task; high expectations; and respect for diverse talents and ways of knowing. In order to know how students learn, it is essential to find out what makes them tick. Research should become the working partner of both personal experience with learning and focused conversations about learning with colleagues. Faculty must know what to look for (through research), observe themselves participating in lifelong learning (self-reflection), and be much more aware of students' learning. A powerful advantage of using research findings to start conversations about learning is that it is a way to involve faculty and administrators actively in learning. (Contains 18 references.) (SM)

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From AAHE's 1998 National Conference on Higher Education:

"WHAT DO WE KNOW ABOUT STUDENTS' LEARNING AND HOW DO WE KNOW IT?"

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Professor of Higher Education, Emerita
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An early brochure announcing the theme for this year's conference assigned me the title, "From Taking Teaching Seriously to Taking Learning Seriously." It was upon reading that title that I realized that I was being invited to put a positive spin on my speech of 12 years ago by suggesting progress in moving beyond a concern about teaching to a concern about learning. But the more ominous spin that is being put on that "from-to" format suggests that we can now forget about improving teaching and concentrate on improving learning. Not so fast! I think that the point that Barr and Tagg were making in their frequently-quoted article in *Change* entitled-- unfortunately perhaps -- "From Teaching to Learning," is that there is an important difference in the climate of a campus when the focal point for attention is students and their learning rather than teachers and their teaching (Barr & Tagg, 1995). I don't think that anyone is suggesting that we must make a choice between good teaching and good learning.

What is highlighted in this year's conference theme, I think, is that students and their learning should become the focus of everything that we do. From the instruction that we provide, to the intellectual climate that we create, to the policy decisions that we make -- all should start with the question, "But will it improve students' learning?" That is the question I wish to address, and basic to any answer is the state of our knowledge about learning. That is why I have chosen to title these remarks, "What do we know about students' learning, and how do we know it?

We have more information about learning available to us than ever before in the history of the world, and the amount of research on learning is escalating at an alarming rate. About 30 years ago, a large book entitled *The Impact of College on Students* by Feldman and Newcomb (1969) appeared, promising to tell us everything we ever wanted to know about student learning in college. The cover blurb assured us that "Everything written of any importance -- during the last 40 years -- has been thoroughly reviewed, analyzed, and distilled in this definitive compendium of research on higher education and college students. . ." (I doubt that any publisher today would be quite so confident that they had published the definitive book) Nevertheless, the book lived up to its promise and ran to almost 500 pages, reviewing nearly 1500 research studies.

Almost a quarter of a century later, in 1991, an even larger volume appeared, entitled *How College Affects Students* by Pascarella and Terenzini, running to almost 1000 pages and reviewing nearly 2600 studies. And the number of research studies continues to escalate. I figure that in ten years we should look forward to -- if that is the correct terminology -- a 2000 page treatise reviewing approximately 5000 studies, telling us perhaps more than we ever wanted to know about what and how students learn in college.

Despite the undeniable value of these books pulling together what we know about student learning in college, I doubt that we will ever see that next volume -- either because such a huge compendium of information will no longer be presented via the printed page or because the research will change radically, not just in methodology and customization to more sharply defined issues, but in credibility and usefulness.

Right now we are struggling as never before to make research useful -- to apply it to the improvement of undergraduate education. The current model for usefulness is to cope with the information explosion by ever-tighter syntheses and distillations. In our times, Pascarella and Terenzini have done the major

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work of synthesizing thousands of research studies into 1000 pages. Since most administrators and faculty don't have time to read 1000 pages, the next step has been to condense the 1000 pages into one or two pages of bulleted principles or conclusions.

I have on my desk right now a collection of such distillations of what we know about the learning of college students. The best known, certainly the most widely distributed list, is the "Seven Principles for Good Practice in Undergraduate Education." The Seven Principles were developed by convening a group of scholars of higher education and asking them to derive from their knowledge of the past 50 years of research a set of principles that could be applied to improve learning. Chickering and Gamson (1997) then formulated the conclusions into "seven principles," making them widely available to educators.

In addition to the seven principles, there are the "three critical conditions for excellence" formulated by the Study Group on the Conditions of Excellence in American Higher Education (1984), the nine strategies for improving student learning set forth by the Oxford Center for Staff Development (1992) in England,

established by the American Psychological Association has come forth with a dozen learner-centered principles representing psychology's accumulated knowledge about learning and instruction (McCombs, 1992)

We have been using what I call the mining approach to discovering and disseminating information. We are mining tons of ore to come up with a nugget of gold. True, our technology for bringing the ore to the surface is making the mining more feasible than ever before, but are we now faced with the prospect of mining old mines from which most of the gold has already been extracted? Pascarella and Terenzini admit unabashedly that, "Our conclusions about the changes that occur during college differ in only minor ways from those of Feldman and Newcomb. . . " (p. 563)

I don't want to make light of the contributions of research to knowledge about how college affects students. I think those who have been mining the ore and those who have been extracting the gold have performed valuable services in making the results of research available to a wide audience. But I am going to suggest that we, as an educational community, are becoming too dependent on what the authorities in research tell us about learning. As lifelong learners, teachers, and scholars ourselves, we know a thing or two about how people learn, and that is what I want to talk about today.

John Naisbitt says that, "We are living in the time of the parenthesis, the time between eras. . . a time of change and questioning." (1982, p. 249). Some believe that we are coming to the end of an era that the late Donald Schön, of MIT, called "technical rationality," and that there is little to be gained by trying to apply rigorous scientific methods to problems that may not lend themselves to easy answers. The professions are in the midst of a crisis of confidence and legitimacy, says Schön, because professional knowledge is mismatched to the conditions of practice. Schön puts the dilemma this way:

> "there is a high, hard ground where practitioners can make effective use of research-based theory and technique, and there is a swampy, lowland where situations are confusing 'messes' incapable of technical solution. The difficulty is that the problems of the high ground, however great their technical interest, are often relatively unimportant to clients or to the larger society, while in the swamp are the problems of greatest human concern. Shall the practitioner stay on the high, hard ground where he can practice rigorously, as he understands rigor, but where he is constrained to deal with problems of relatively little social importance? Or shall he descend into the swamp where he can engage the most important and challenging problems if he is willing to forsake technical rigor?" (1983, p. 42)

The assumption of most researchers is that further refinement of research methods, new statistical controls, more rigorous standards will lead to greater knowledge. Many are now questioning that assumption. It doesn't take much reading of the scholarly literature in education these days to see the huge question marks raised by the philosophical "isms -- constructionism, feminism, modernism, post-modernism. The "isms" are questioning the very nature of knowledge. Until we know what knowledge is, they say, we can't really say how to attain it. In a nutshell -- which is perhaps not the way philosophers prefer to present their food for thought -- the epistemological question is, do learners discover knowledge that exists "out there" in reality or do they construct it for themselves through a process of language, thought, and social interaction?

Kenneth Bruffee is a professor of English at Brooklyn college and an advocate of "nonfoundational social constructionism," which to my mind, is a rather awkward term for the belief that knowledge is socially constructed rather than discovered. "We construct and maintain knowledge," Bruffee says, " not by examining the world but by negotiating with one another in communities of knowledgeable peers" (1993, p. 9). Knowledge, he says, is "therefore not universal

In contrast, the foundational or conventional view of knowledge contends that there is a reality "out there," a foundation upon which all knowledge is built. The task of learners is to discover the world that exists. That means, of course, that there is a right answer, and that the experts know what it is or have ways of eventually discovering it though objective scientific research.

The role of teachers and students is quite different in these two epistemologies. The difference is perhaps best illustrated in a series of articles in *Change* that contrasted cooperative and collaborative learning -- frankly a topic which, at first blush, seemed to me not something I needed to get excited about. (Whipple, 1987; Bruffee, 1995; Matthews, 1995). But reading more deeply, I discovered that while both pedagogies seemed modern and enlightened in their agreement about the virtues of active learning, students teaching students, learning the skills of teamwork, benefiting from diversity, and most of the other advantages embedded in small group learning, cooperative and collaborative pedagogies had very different ideas about the nature of knowledge and how students should go about achieving knowledge.

Briefly, cooperative learning involves the more conventional notion of cooperation, in that students work in small groups on an assigned project or problem under the guidance of the teacher who monitors the groups, making sure that students are staying on task and are coming up with the correct answers. This assumes, of course, that there is a right -- or at least a best -- answer, and that the teacher knows what it is. Cooperative learning is what I think most faculty joining the learning revolution are thinking about.

Collaborative learning is a more radical departure. It involves students working together in small groups to develop their own answer -- not necessarily a known answer -- through interaction and reaching consensus. Monitoring the groups or correcting "wrong" impressions is not the role of the teacher since the teacher is not considered the authority on what the answer should be. The teacher would be interacting along with students to arrive at a consensus.

Although the logic of social constructionism seems extreme to conventional education, the challenge it presents is worth serious consideration. Among other things, it lies behind some aspects of multculturalism, in which the question is, Who says that the truth about the world lies in majority cultures?

Conventional instruction is based on a hierarchical model in which those who know teach those who do not know. Ultimately, there are answers to every question, and scholarship consists of knowing the answer or knowing how to find out. Once that epistemology is accepted, students -- and yes faculty and administrators too -- can compete for who has the most or best answers. Gene Rice notes that today's colleges and universities are widely viewed as "the place where talented men and women -- students, faculty, and administrators -- contend for competitive advantage." (Rice,1996. p. 4). And I can't argue with that. Students are rewarded for their right answers by high grades and selection to the best colleges; faculty are rewarded for their search for right answers by research grants and tenure, and administrators compete for fame for their campus by establishing the greatest storehouses of knowledge with large libraries, computer systems with huge memories, and a prominent research faculty. In sum, the epistemology on which our current educational system is built is that knowledge is accumulated by discovering the "truth" about the reality that exists. It can be discovered through scientific research, stored in libraries and computers, and disseminated via publications and teaching. And, yes, it can be transferred from researchers to practitioners.

The contrasting epistemology that is proposed by many of the "isms" holds that knowledge is constructed by humans through social interaction. Education, therefore, should be based in learning communities where teachers and students act interdependently to construct meaning and understanding. The model is collaborative and egalitarian. According to Bruffee, social constructionism contends that "knowledge is a consensus among the members of a community of knowledgeable peers -- something people construct by talking together and reaching agreement." (1995, p. 3)

That is pretty close to what Schön recommends when he suggests that practitioners should engage in a search for knowledge by asking themselves what "kinds of knowing are already embedded in competent practice?" (1995, p. 29) That would seem to call for communities of practitioners to generate relevant knowledge about the practice of their profession. Teachers would talk with one another about what they have observed in their own learning and the learning of their students.

Another strong sign of a radical shift in our view of how knowledge is generated is found in the work of feminist thinkers about women as learners. Belenky

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and her colleagues (1986) sparked a strong strain of sympathetic recognition among women teachers and students when they demonstrated that many women display different "ways of knowing" from the male model that has dominated academe for so many years. The male model is characterized by "separate knowing" -- a way of learning that is impersonal and objective; involving detachment, critical argument, analysis, and other descriptors that we associate with the "scientific method." Many women, however, are "connected learners." "Connected learners" say the authors, "develop procedures for gaining access to other people's knowledge. At the heart of these procedures is the capacity for empathy." (Belenky, 1986, p. 113).

Blythe Clinchy describes a connected learner's search for knowledge this way: "She does not ask whether it is right; she asks what it means. When she says, 'Why do you think that?' She doesn't mean, 'What evidence do you have to back that up?' She means, 'What in your experience led you to that position?" (Clinchy, 1990, p. 122) This student's search for knowledge, argues Clinchy, is best accomplished through connected conversations, "in which each person serves as midwife to each other person's thoughts, and each builds on the other's ideas." (p. 123). At heart, a connected conversation is a learning community at its best, and it is also a reflection of changing ideas about the source of knowledge and learning.

The cutting-edge books about the revolution taking place in business are yet another indication of the pervasiveness of a changing perspective about the origins of knowledge. Peter Senge, in his book on the *Fifth Discipline* (1990) goes on at some length about the emergence of new knowledge through dialogue with peers. He calls for "a shift of mind -- from seeing ourselves as separate from the world to connected to the world, from seeing problems as caused by someone or something 'out there' to seeing how our own actions create the problems we experience. A learning organization is a place where people are continually discovering how they create their reality. And how they can change it." (pp. 12-13). Once again that sounds like a shift from discovering knowledge that lies in reality "out there," to creating knowledge that lies within human interchange.

If we are entering the 21st century in the parenthesis of philosophical questioning between scientific rigor and other ways of knowing, I cannot help noting the

William Perry is perhaps the best known developmentalist to those of us in higher education. He posits nine positions of intellectual development for college students, but the three major positions can be presented briefly. The scheme starts at the low end of intellectual development, with students assuming that there is a right answer to every question, and that the answer is known by an authority -- namely the professors who are hired to teach them. Students entering college in the early stages of intellectual development have a low tolerance for ambiguity, but they can grant that in some cases we haven't found the answer yet. Their assumption, like ours as a society, is that authorities in research will tell us the answer, and if they don't know it yet, they will eventually discover it. And like students who want quick and unqualified answers, we prefer that the experts make the answers available to us in brief, clear, unambiguous form, such as the three or seven or twelve principles of learning.

At the mid-level stages of Perry's student development theory, gray areas appear as students begin to discover that authorities often disagree, and that the views of their fellow students often differ from their own. In an effort to resolve these inevitable discrepancies, students adopt an "everyone has a right to their own opinion" stance.

This middle stage seems to me to correspond in an eerie way to the developmental stage of society today, as we discover that there are many different views and that authorities often disagree. Certainly we have ample evidence that research authorities disagree on almost everything from the future of the economy to what causes cancer to how children should be raised. Thus we, as a society, have entered the mid-levels of intellectual development by contending that knowledge is a product of one's own experience and each person's experience is democratically and equally valuable. "Everyone has a right to their own opinion" we say.

There is a seemingly inexhaustible demand for participatory discussion groups and internet exchanges on what other people think. It is not just television and radio talk shows that display an insatiable curiosity about other people's notions and experiences. Any educational conference that claims to be enlightened must present ample opportunity for discussion groups, workshops, and interactive conversations, and must keep lectures to a minimum -- and I am in favor of that. But there is a growing impatience and distrust with authoritative knowledge and "experts" in any field, but especially in the messy social sciences such as psychology, sociology, and education. *Time* magazine, in pondering the tendency of the American public to ignore the pronouncements of authorities, observed recently that, "Americans don't listen to pollsters and economists. They listen to neighbors, to friends, to family . . ." (January 5, 1997, p. 91). The

questioning philosophical "isms" are controversial right now, but perhaps they are leading society into the mid-level stages of intellectual development by questioning authoritative answers and engaging in discourse, and listening more attentively to experience.

At the highest levels of intellectual development -- a stage rarely reached by those who have been studied -- there is an affirmation of identity through commitment and self-actualization. Developmental theorists are not very clear about the highest levels of personal development because they haven't seen much of it, and we are not very clear about what a fully-developed intellectual society would look like for the same reason. We haven't yet seen it. But most developmental psychologists are constructivists. They contend that the highest levels of personal development are reached as the person discovers that truth is relative and depends on context. There is not a single right answer, nor is one answer as good as any other. Rather, at the highest levels of development, the individual is able to evaluate truth in terms of the context in which it occurs.

In developmental theory, the periods of greatest personal growth are thought to lie in the unnamed and poorly-defined periods between stages. It is reasonable to assume that our societal position in the parenthesis offers an especially good opportunity for growth. Is there a societal developmental sequence that progresses from "right answers," to "everyone has a right to their own opinion," to commitment through careful and thoughtful evaluation of truth in context?

Today's theory about human development, it turns out, is not very different from what Socrates was promoting when he defended himself against the charge of corrupting the young by saying that democracy needs citizens who can thnk for themselves rather than simply defer to authority, who can reason together about choices rather than simply trade claims and counter claims. There are, as we know, charges today that universities are corrupting the young by exposing them to ideas that question the authority of traditional values. But the danger of corrupting the young by requiring them to think for themselves is no greater today than it was in the time of Socrates.

I entitled these remarks "What do we know about student learning, and how do we know it?" The first question, "What do we know about student learning?" is intended to provide me with the opportunity to give a few "right answers;" the second question, How do we know it?" is intended to raise questions about authoritative knowledge.

The most efficient way to answer the first question about what we know about student learning is to collect the gold nuggets already mined from extensive research and melt them down into a gold bullion. In short, I could synthesize the condensed lists or "principles," and develop one or more meta-principles. If I were to do that, I would come up with a grand meta-principle that would say something like this: What we know about student learning is that students who are actively engaged in learning for deeper understanding are likely to learn more than students not so engaged. The disillusioning thing about that conclusion is that we already knew that from our own experience as learners -- which is beginning to make the challenging epistemologies of knowledge based in personal and social experience more appealing.

Let us look specifically at the Seven Principles of Good Practice to see what they really tell us: To refresh your memories, the Seven Principles are stated as follows:

1. Good practice encourages student-faculty contact.
2. Good practice encourages cooperation among students.
3. Good practice encourages active learning.
4. Good practice gives prompt feedback
5. Good practice emphasizes time on task
6. Good practice communicates high expectations
7. Good practice respects diverse talents and ways of knowing.
   (Chickering & Gamson, 1987)

What the principles really tell us is how to get and keep students actively engaged in learning. Active learning is the grand meta-principle here. What troubles me is that the provision of the list violates its own advice. What we know about learning is that people have to find their own answers by working though the

pathways to knowledge. Telling people what the "experts" know is not likely to result in the kind of deeper learning that we want to encourage. Peter Ewell (1997) makes the interesting observation in a recent issue of the *AAHE Bulletin* that our limited success so far in improving learning is due largely to our lack of a deep understanding of what "collegiate learning" really means and to our implementation of piecemeal reform efforts that don't fit together very well. I wonder if our enthusiasm for bulleted distillations of research findings may not be responsible in part for our failure to understand at some deeper level what constitutes a program of learning.

Let us examine the first principle -- good practice encourages student-faculty contact. How do we know that? Mostly through large-scale correlational studies that conclude that students who have frequent contact with faculty members in and out of class are better satisfied with their educational experience, less likely to drop out, and perceive themselves to have learned more than students with less faculty contact (Pascarella & Terenzini, 1991). Now, the experts who pass on that conclusion know at a deeper level than we who receive the conclusion the following things: First, that correlation tells what goes together but not why. For instance, it is quite possible that the correlation results from successful students being more likely than less successful students to seek contact with faculty. In other words, it is possible that success leads to faculty contact rather than that faculty contact leads to success. It is also possible that faculty who invite frequent student contacts are more likely to be the kind of people who stimulate educational satisfaction than faculty who are not so easily approachable. Thus, it is possible that the more successful we are in bringing about student-faculty contacts -- that is spreading this piecemeal practice to include disinterested faculty and less scholarly students -- the lower the correlations would become.

The second thing that any researcher working with data on human subjects knows is that there are always exceptions to the finding. In this case, there are students who are very successful who have virtually no contact with faculty, and there are students who have a lot of contact with faculty who drop out of college, dissatisfied and disillusioned. Does that mean that we have mined fool's gold in arriving at the first principle of good practice? Not at all. What it means, I think, is that rather than telling people the right answer, as expert researchers have discovered it, we should mix in a generous dollop of insight derived from our experience as learners and as teachers. What we know from our own experience -- sometimes known as common sense -- is that it is not the amount of student-faculty contact that is important. Rather it is the quality of the contact. Truth, in this sense, is contextual. Student-faculty contact in one context is growth-enhancing; in another it is not.

What we actually know through combining research with experience is that when faculty show an interest in students, get to know them through informal as well as formal channels, engage in conversations with them, show interest in their intellectual development, then students respond with enthusiasm and engagement. We also know that when faculty take learning seriously, the attitudes of warmth and intellectual engagement are contagious; they are caught by students and colleagues and the result is a caring campus that is seriously engaged in learning. Measuring the number of student contacts with faculty is at best a surrogate for the quality of interaction. But the kind of research that Schön calls "technical rationality" has a hard time dealing the infinite variety of contexts that are involved in student/faculty contacts.

Our problem in this awkward time of the parenthesis is that we alternate between searching for "right answers" through research and discounting authoritative answers in favor of our own opinions. We hope that the research provides "right answers" that can be transferred from researcher to practitioner and from teacher to student. Or at the other extreme, we discount research, and insist on personal experience and political expediency -- as witness the recent rush to reduce class size, despite conflicting research evidence regarding the efficacy of reduced class size. The question that begs to be answered is not whether small classes result in better learning than large classes, but rather in what teachers could and would do in the context of their own classrooms if class size were reduced. That answer is probably better sought through thoughtful conversations among experienced teachers than it is in the collection of data across large numbers of classrooms categorized only by size.

The challenge for society in the 21st century is to advance beyond the stages of development that result in the authoritarian search for right answers or the egalitarian notion that all ideas are equally valid. Those two stages have dominated our intellectual communities throughout this century.

I am distressed to see researchers -- the acknowledged authorities of our times -- talk about learning with no reference to the experience of teachers who have spent lifetimes accumulating knowledge about learning. But I am equally distressed to see workshops on faculty development in which faculty exchange views about student learning with no reference to what scholars know through study of the matter. My colleague, Mimi Steadman, and I spent several years trying to bring research on learning and experience with teaching together in a book that attempts to integrate teachers' experience and insight with scholarly

research on learning (Cross & Steadman, 1996). I am not certain that we have done it, but I am convinced that it can be done.

From our societal position inside the parenthesis as we approach the 21st century, we are questioning how we know what we know, and the developmentalists would say that is good -- that offers the potential for growth. Frankly, I find what we know today about students and their learning, and how we know it, troubling. It is troubling because it is so heavily dependent on categorizing students into groups -- ironically, just as we are developing the technology for customizing education to individual requirements.

Knowledge about individual differences is lost in much of today's educational research. We purport to know about commuters, part-timers, adult learners, ethnic minorities, women, gays, or any other category that can be represented by checking a box on the measuring instrument. Would you know anything useful about my learning if you knew everything in the book about the learning of white, female, senior citizens? Probably not. Indeed, I can assure you that you would be pretty far off the mark if you identified me with any or all of those group indicators. It is what Toni Morrison meant, I think, when she said "Race is the least reliable information you can have about someone. It's real information, but it tells you next to nothing." (*Time*, Jan. 19, 1998, p. 67)

Ben Bloom (1980) has called the popular demographic descriptors of today "unalterable variables" because as educators, we can do nothing to change them. Unfortunately, demographic descriptors predominate in the educational research of our times because barriers to equality lie in discrimination based on unalterable variables. Certainly we must continue to investigate the powerful impact of sociological variables on learning -- most especially on the opportunity for learning -- but we must also be constantly aware that there are almost always greater differences within demographic groups than between them. The difference between the height of the shortest and tallest 14 year olds is far greater than the difference between the average height of 14 year olds and 16 year olds -- even though that difference is consistently and statistically significant. Stereotyping 14 year olds as "short" does nothing to advance our knowledge about them.

A heavy dependence on group variables is defensible, I guess, when applied to the old s chool structures that were designed in times of assembly- line production. The greatest good for the greatest number is a reasonable approach if the task is to march the group through a standard set of learning procedures in a set period of time. But the efficiency of the assembly line approach depends on a normal curve that has a high hump in the middle -- that is to say most people cluster in the middle around a fairly small range of difference. With the growing diversity of our student populations, that nice normal curve flattens out, so that there are not very many "average" students anymore -- and especially not in open-admissions colleges which span the full spectrum of human abilities and human conditions. The problem for us in this time of the parenthesis is that our educational structures are solidly anchored in assembly line procedures while in our future lies the potential for customization and individualization.

A second problem with our heavy dependence on demographic descriptors lies in the growing difficulty of finding that nice neat box on the survey form that places the student firmly and correctly in the appropriate group. The so-called Tiger Woods syndrome applies to racial descriptors, but with participation in lifelong learning related more to life style than to age, and with career options being more dependent on personal interest than on gender, group descriptors tell us less and less.

But the third and perhaps most serious barrier to taking learning seriously lies in our failure to take individual differences seriously. Studies of individual differences have almost disappeared from the research scene. It is almost as though there is something a bit unsavory -- or at least undemocratic -- about individual differences. But learning is about individuals, and improving learning is about understanding what goes on in the mind of the learner. Let me illustrate with a story.

Once upon a time, a young boy was given a beautiful old clock by his grandfather. He was thrilled with the clock, but it quit running after 8 days. Eager to know what was wrong with his clock, he took it to the researchers at the university. The boy thought maybe they would open up the clock to examine the running mechanism, but the researchers said that findings based on study of a single clock would not be generalizable. So they embarked upon a research project.

First they collected a sample of 100 clocks, including clocks of different sizes, colors, and country of manufacture. They then measured very precisely to the minute how long the clocks in each group ran. Upon analyzing their results, they found that while there did not seem to be a statistically significant differences in the running time of clocks of different colors, they did find that small clocks tended to run longer than large clocks, and they found one very exciting

relationship. Controlling for color and size, they found that clocks made in Japan tended to run, on average, significantly longer than those made in Switzerland.

Unbeknownst to them -- because they didn't open up the clocks to investigate variables, such as quartz mechanisms and pendulums, that were relevant to

energizer batteries that just kept going and going and going.

The researchers could assure the boy that if he bought a sufficiently large number of clocks from Japan, there was a better chance that he would get a long-running clock than if he bought the same number from Switzerland. Unfortunately, they could not tell him why clocks from Japan tended to run longer, nor which clocks to buy, nor could they tell him what to do to get his own clock running.

The moral of my story is that if you want to know how students learn, find out what makes them tick. Looking carefully at how even one student learns is often quite revealing, and most of us have an opportunity to observe a wide variety of learners in the act of learning. Moreover the students that we observe are our students in the process of learning our discipline; they are the most relevant sample of learners that we could imagine. The problem is that we have not trained ourselves to take learning seriously. Every student who writes a paper, takes a test, asks a question, participates in a student activity as leader or follower, or who comes to our office hours for conversation or help has a lesson to teach us about how students learn.

Although I may appear to have been critical of educational research this morning, I want to assure you that I think research is important to taking learning seriously. In criticizing what I see as our over dependence on correlational and experimental research that leans heavily on group variables, I do not mean to suggest that research on learning is at a standstill. Indeed, the new research on neural networks of the brain, meta-cognition, motivation, and the like provide, even at these early stages of development, glimpses of a future rich with promise. That research, however, is going to require of all of us, a deeper level of understanding than the research of the past. Research should become the working partner of both our own experience with learning and focused conversations about learning with our colleagues. If we are to take learning seriously, we will need to know what to look for (through research), to observe ourselves in the act of lifelong learning (self-reflection), and to be much more sensitively aware of the learning of the students that we see before us everyday.

At present , I think we are prone to consider research findings as the conclusion of our investigations into learning. We might do better to think of them as the start of our investigations. For example, rather than assuming that the message of the first principle of the Seven Principles is that we should develop programs to increase student-faculty contact, we might use that research finding as a starting point for discussion about what it is about student-faculty contact that promotes learning. What role has it played in our own experience and why? What, exactly, is it about student-faculty contact that seems to enhance learning? Is it the nature of the individual conversations or is it the affective feeling of belonging to a learning community? Is it the particular help on a sticking point that shows a student how to learn or is it the fact that the teacher shows interest -- or both? I don't think that researchers know the answers to these questions, and the answers are important if we are to take learning seriously.

But perhaps the most powerful advantage of using research findings to start the conversations about learning is that it is a way to involve faculty and administrators actively in learning about learning. It is one way to push beyond the surface learning that is involved in knowing the slogan, "Good practice encourages student-faculty contact." to the deeper understanding that lies behind the research. People can comply with a new student-faculty contact initiative without fully comprehending that it is their own understanding of why they are engaging in the activity that will determine how well it works. Attending student-faculty get-togethers is one thing; understanding why they work to create a learning community is another, and working actively to assure success is still another.

If I could leave but one message with you today, it would be that if higher education is to take learning seriously, then each one of us, in whatever role we occupy, must take learning seriously.

REFERENCES

Barr, R. B., & Tagg, J. (1995). "From Teaching to Learning: A New Paradigm for Undergraduate Education." *Change*, November/December, 13-25.

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Belenky, M. F., Clinchy, B.M., Goldberger, N.R., & Tarule, J.M. (1986). *Women's Ways of Knowing: The Development of Self, Voice, and Mind*. New York: Basic Books.

Bloom, B. (1980). *The New Direction in Educational Research: Alterable Variables*. Phi Delta Kappan (Feb.), 382-385.

Bruffee, K. A. (1995). *Collaborative Learning: Higher Education, Interdependence, and the Authority of Knowledge*. Baltimore, MD: The Johns Hopkins University Press.

Chickering, A. W., & Gamson, Z. F. (1987). "Seven Principles for Good Practice in Undergraduate Education". *The Wingspread Journal*, 9(2), See also *AAHE Bulletin*, March, 1987.

Clinchy, B. (1990). "Issues of Gender in Teaching and Learning". *Journal on Excellence in College Teaching*., 1. Reprinted in Feldman, K.A.and Paulsen, M.B. (Eds.) (1994) *Teaching and Learning in the College Classroom*. ASHE Reader Series. Needham Heights, MA: Ginn.

Cross, K. P., & Steadman, M. H. (1996). *Classroom Research: Implementing the Scholarship of Teaching*. San Francisco: Jossey-Bass.

Education Commission of the States (1996). "What Research Says About Improving Undergraduate Education". *AAHE Bulletin*, 48 (April), 5-8.

Ewell, P. T. (1997). "Organizing for Learning". *AAHE Bulletin*, 50(4), 3-6.

Feldman, K. A., & Newcomb, T. M. (1969). *The Impact of College on Students*. San Francisco: Jossey-Bass.

Matthews, R. S., Cooper, J. L., Davidson, N., & Hawkes, P. (1995). "Building Bridges Between Cooperative and Collaborative Learning". *Change*, 27(July/August), 34-40.

McCombs, B. L. (August, 1992). *Learner-Centered Psychological Principles: Guidelines for School Redesign and Reform* (Revised Edition). Washington, DC: American Psychological Association, APA Task Force on Psychology in Education.

Naisbitt, J. (1982). *Megatrends*. New York: Warner Books.

Pascarella, E. T. & Terenzini, P. T. (1991). *How College Affects Students*. San Francisco: Jossey-Bass.

Oxford Centre for Staff Development (1992). *Improving Student Learning*. Oxford, England: Oxford Brookes University. Reprinted in "Deep Learning, Surface Learning," *AAHE Bulletin*, April 1993, pp. 10-11.

Schön, D. A. (1983). *The Reflective Practitioner*. New York: Basic Books.

Study Group on the Conditions of Excellence in American Higher Education (1984). *Involvement in Learning: Realizing the Potential of American Higher Education*. Washington, D.C.: National Institute of Education.

Whipple, W. R. (1987). "Collaborative Learning". *AAHE Bulletin*, 40(2, October), 3-7.

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